



White Nose Syndrome Response Plan

Craters of the Moon National Monument and Preserve

Revised March 2012

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Approved: _____
John K. Apel (Acting Superintendent)

Date: _____ 3/30/2012 _____

INTRODUCTION

Unprecedented mortality in several species of hibernating bats is being caused by a fungal disease (*Geomyces destructans*) termed “White-Nose Syndrome” (WNS). It is named for the frosty white fungal growth that covers the muzzles and other parts of affected hibernating bats. WNS has killed 5.7 - 6.7 million bats since it was discovered in a New York cave in 2006 and is decimating bat populations across eastern North America, with mortality rates reaching up to 100 percent at many sites (USFWS Jan. 2012). WNS has now spread to 19 states and 4 Canadian provinces. Six species of bats have been found to be affected by WNS and the fungus, *Geomyces destructans* has been detected on 3 additional species.

Little brown bats (*Myotis lucifugus*) are among several species that have been hit particularly hard. Petitions for emergency listing of the Little Brown Bat on the Endangered Species list have been submitted to the U.S. Fish and Wildlife Service citing recent studies indicating a 99% likelihood of the regional extinction of the species by 2026. The little brown bat is the most common species of bat found within Craters of the Moon National Monument and Preserve (CRMO). Therefore, the spread of WNS and its impact on bat populations within the park is of great concern.

The potential for WNS to continue spreading west is high, having already spread from New York State to as far west as Oklahoma (unconfirmed) since 2006. Present understanding is that WNS is chiefly communicable and spread between bats (i.e., bat to bat). However, the U.S. Fish and Wildlife Service and the U.S. Geological Survey report that there is evidence suggesting that humans can be a vector for

introduction of WNS. Some of the long distance jumps of WNS, well beyond normal migration distances, strongly suggest an anthropogenic vector.

PURPOSE- “minimize the risk of spreading WNS”

The NPS Deputy Director for Operations, in a September 2010 Memorandum, instructed all parks with cave resources to update their cave management plans to include actions to minimize the risk of spreading WNS via anthropogenic means. He said “*These actions may likely include restricting access to caves and mines to individuals who hold appropriate permits and who have been screened by NPS personnel.*” CRMO has established this “**WNS Response Plan**” to reduce the chances of the human-assisted spread of WNS.

SITE

The entire Monument and Preserve encompasses about 750,000 acres (303,525 hectares), of which NPS manages 465,000 acres (188,185 hectares). The vast majority of NPS’s land is made up of geologically young (Late Pleistocene and Holocene) lava flows and other volcanic features. The 285,000 acres (115,340 hectares) managed by the Bureau of Land Management (BLM) primarily consists of older lava flows and cones that are mantled with significant deposits of loess that support sufficient plant life to be utilized for grazing allotments. Seven different kinds of caves are known to occur within CRMO and which can provide good bat habitat:

Differential Weathering Caves: Differential weathering of agglutinated cinders on some cinder cones has generated a few shallow caves; less firmly welded or sintered layers being more easily eroded. Some of these small caves are over 10 feet deep.

Lava Tubes: Lava tubes, which are hollow spaces beneath the surface of solidified lava flows, are formed by the withdrawal of molten lava after the formation of the surface crusts. Lava tubes can be relatively small (too small for a human to enter, but not too small for wildlife) or quite large (10’s of feet wide and high) and can extend more than a mile in length.

Rift/Fissure Caves: The Great Rift, which runs for more than 50 miles across the Snake River Plain, has produced a number of caves associated with this massive fissure system. The caves may be roofed over by lava or spatter that was being ejected from the eruptive fissure before the lava withdrew to greater depths. The

cave also can be roofed over with material that has collapsed from the sides. The floors are mostly rubble, often partially and poorly held together by ice. Though these caves can be sources of water, they are inherently dangerous because of their rubble and ice floors, which may be unsupported beneath.

Spatter cones and Hornitos: Spatter cones form when fluid globs (spatter) are ejected short distances (generally <200 ft or <60 m) from the vents and accumulate immediately around the vent forming short steep-sided cones. The conduit(s) that fed the spatter cones can remain open and thus produce caves; “Crystal Pit” and “Snow Cone” are good examples of this phenomenon. Hornitos, which are similar to spatter cones except that they are tube-fed rather than fed directly by the eruptive fissure, can also produce similar caves.

Talus Caves: Talus Caves are produced most often by collapse, slumping, and landslides. There is a talus cave in the bottom of Big Craters, where the arrangement of the collapsed or slumped debris has produced a cave. Similar caves may be present in other talus deposits.

Tumuli Caves: Tumuli caves are produced in inflated flows. Elongated tumuli, often called pressure ridges in the past, frequently have tension fractures that run down the axis and can be chalked with break down and in some cases with squeeze-ups. The edges of highly inflated flow lobes and pressure plateaus also often have very deep inflation clefts along their edges that also can be chalked.

Lava Blisters: Lava blisters that form from pockets of gas being trapped beneath a congealing crust of lava are often small, but produce great den sites for animals.

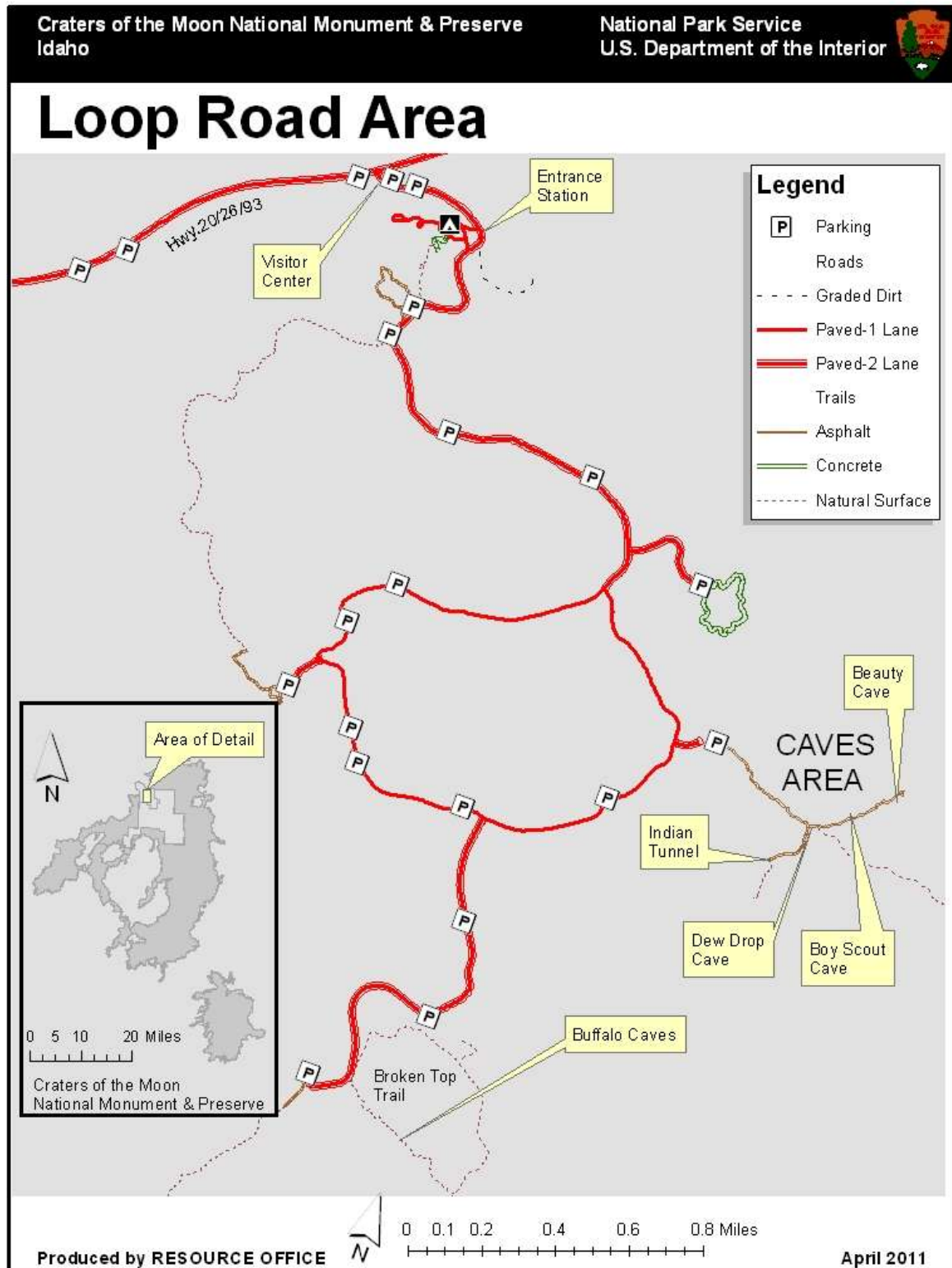
All of these cave types can afford day roosting sites depending on the bat species’ preferences (e.g., some bats prefer crevices or other habitats). Some of these caves are known to be used as hibernacula and others for maternity colonies. Of the 329 caves currently inventoried on NPS managed lands, the vast majority are lava tubes. About fifteen additional lava tubes are known on surrounding BLM managed lands. The actual number of caves present is likely much larger. Approximately 90% of the total land area in CRMO is either designated or recommended Wilderness. Most of the lava fields have not been systematically surveyed for caves because of the inaccessibility of the terrain and because of the huge area (approximately 1,100 square miles; ~2850 square kilometers) covered by the National Monument and Preserve.

All undeveloped caves on NPS managed lands require an entry permit to comply with current NPS Management Policies (2006). All but five of the caves on NPS

lands are considered undeveloped. Until a new Cave Management Plan is completed, no entry permits to undeveloped caves will be issued for recreational use. Entry into undeveloped caves will be through the NPS Research Permit System only. The difficulty of access (lack of trails and roads) and sheer remoteness of most of these undeveloped caves has limited recreational use historically and should continue to be an asset in preventing the spread of WNS through an anthropogenic vector despite the lack of gates to assure compliance with closure.

The five developed caves on the NPS lands actually fall under the NPS classification of being “*minimally developed*”, i.e., they are managed to provide relatively easy access, but with minimal modification of or to the cave resources. These five developed caves are: Indian Tunnel, Dew Drop, Boy Scout, Beauty, and Buffalo caves (See Map 1). All five have improved trails to their cave entrances and in the case of the first four, the access trails are paved. But, the interiors of these five caves remain in a largely wild unimproved state. These developed caves have been part of ranger guided walks for over 50 years. With trails provided to them, however, they have received even heavier use by visitors for self-guided exploration. The majority of cave visits have been done as unguided self-exploration. Visitor use surveys indicate the Caves Area is the most popular trail on the loop road. Based on the most recent visitor use survey, which was done by the University of Idaho in 2004, about half (45%) of the ~250,000 visitors coming into the park annually visit a cave. An even higher percentage (67%) of the respondents who hiked a trail reported that they had visited a cave.

In 2011, the first year of screening, about 4,800 visitors attended ranger guided cave-walks to one of the developed caves. In addition annually 3,000-4,000 school children typically visit the developed caves, which document their educational value. Currently based on visitor survey data and the anecdotal observation by numerous staff members, most visits to the developed caves are as self-guided exploration. Printed cave guides have been available for decades both at the visitor center and at the trailhead of the cave area. These cave guides facilitate self-guided exploration and encourage learning about and the appreciation and care of the cave resources. Waysides along the access trails also help facilitate self-guided exploration and learning. Removal of cave guides and waysides would likely do little to deter visitation, but because less information would be available about their significance, value, and proper use, their removal might actually encourage damage and improper use. Therefore, removal of guides or waysides is not considered a viable alternative.



Map 1. Map of the Loop Road area with locations of Developed Caves, Entrance Station, and Visitor Center shown.

THE RESOURCE AT RISK

WNS primarily threatens bats that hibernate. More than half of the 45 bat species found in the U.S. rely on hibernation as a primary strategy for surviving winter when insect prey is not available. The fungus (*Geomyces destructans*) is a “cold-loving” fungus and evidence suggests the fungus is infecting these bats when they reduce their body temperatures during hibernation. The fungus then acts as a chronic disturbance during hibernation causing bats to consume critical body reserves and leading to other physiological problems. This increase in frequency or duration of arousals during winter can quickly tip the energy balance of a hibernating bat toward starvation (USGS WNS web site accessed Jan. 2012).

CRMO is an important bat site in the state of Idaho because of the many hundreds of caves (potential hibernacula), which it contains. Bats are a critical ecological component of both the subterranean and surface environments in the park. WNS threatens the survival of hibernating bats and has the potential to influence ecosystem functions in ways that we currently do not understand. The value of insectivorous bats to agriculture in southern Idaho has been estimated to be in excess of \$5 million per county annually (*Science*, v 332, pp 41-42, April 2011).

All of CRMO’s bat species have been known to hibernate. Only one of the documented bats in CRMO is *primarily* migratory. This puts nearly every bat in CRMO (and in Idaho) at potential risk.

CRMO BATS

Nearly all (11 of 14) of the bats known to Idaho have been documented in CRMO. Four other species may occur there (2 species have been documented close enough to CRMO to likely occur there and the park is within the known range 2 others). Three of the four known maternity colonies of the Townsend’s big-eared bat (*Corynorhinus townsendii*) documented in Idaho are found on CRMO.

Little is known about where bats are hibernating within CRMO. In fact, only 2 caves are documented as known hibernation sites. Species known to hibernate at these sites include: Townsend’s big-eared bat, big brown bat (*Eptesicus fuscus*), little brown myotis (*Myotis lucifugus*), long-eared myotis (*Myotis evotis*), western small footed myotis (*Myotis ciliolabrum*), and California myotis (*Myotis californicus*).

Several other hibernating species have been documented in the park including: Yuma myotis (*Myotis yumaensis*), long-legged myotis (*Myotis volans*), fringed myotis (*Myotis thysanodes*) and Pallid Bat (*Antrozous pallidus*). In addition, the canyon bat (*Parastrellus Hesperus*) has been documented near Burley and is likely present in the Wapi lava field (Munts 2011). Hibernacula for these species have not been identified due to the lack of survey information and/or the difficulty in identification without handling. There are no records of the spotted bat (*Euderma maculatum*) however, the park lies within the known range of this species.

Present understanding is that WNS poses little threat to primarily migratory bat species. However, for the 3 migratory species that have been, or could be found in the park there seems to be no hard and fast rules about migration. All three of these primarily migratory species have been noted in the literature to either occasionally hibernate or to hibernate within part of their known range. The hoary bat (*Lasiurus cinerus*) which has been documented in the park “may hibernate rather than migrate” (Whitaker 1980 *in* Natureserve 2012). The silver-haired bat (*Lasionycteris noctivagans*) which has been found in the BLM monument, “generally migrates south for winter” (Natureserve 2012). The western red bat (*Lasiurus blossevilli*) (no records but the park lies within the known range) “may migrate or hibernate” (Schmidly 1991 *in* Natureserve 2012). The effects of WNS on these occasional hibernators are not known.



■ Photo 1. Townsend’s big-eared bat in Pond Cave. Photo by Michael Durham

Bat Species	Present in Park	WNS Infected	Primarily Hibernates	Known in Caves Area	Comments/ Known Location Information
Big Brown Bat	Yes	Yes	Yes	Yes	Documented in the monument in the 1990's (Keller)*
California Myotis	Yes	No	Yes	No	North End only, not documented since 1987*
Canyon Bat	Possible	No	Yes	No	Common near Burley, likely on Wapi (Munts 2011)
Fringed Myotis	Yes	No	Yes	Yes	North End only, 1990's (Keller), Little Cottonwood Canyon (2004). Idaho state species of concern (2003) *
Hoary Bat	Yes	No	No	No	North End only, widespread in Idaho, one unverified record (1979), Lava Lake (2004), Little Cottonwood Canyon (2004) *
Little Brown Myotis	Yes	Yes	Yes	Yes	Documented in the monument in the 1990's (Keller), Hot Springs (2003) *
Long-Eared Myotis	Yes	No	Yes	Yes	Documented in the monument in the 1990's (Keller), Lava Lake (2003) *
Long-Legged Myotis	Yes	No	Yes	No	North End only, 1990's (Keller), Little Cottonwood Canyon (2004). Idaho state species of concern (2003) *
Pallid Bat	Yes	No	Yes	No	Single Record in Echo Crater, This species may be rare in the monument. A visitor documented it in 2002 through an acoustic bat echolocation analysis system*
Silver-Haired Bat	Possible	No	No	No	Has been found in BLM Monument, widespread in Idaho, frequently occurs in habitat similar to the monument*
Townsend's Big-Eared Bat	Yes	No	Yes	Yes	1990's and 2004 (Keller). The species uses lava tubes in the monument as hibernacula and as summer maternity roosts. Idaho state species of concern. *
Western Small-Footed Myotis	Yes	No	Yes	Yes	1990's (Keller). This species occurs throughout the monument and uses lava tubes as day roosts. One female was captured at the hot springs in 2003*.
Yuma Myotis	Yes	No	Yes	No	North End only, 1990's (Keller), Lava Lake (2004) *
Spotted Bat	Possible	No	Yes	No	No records but park is within known range of species
Western Red Bat	Possible	No	No	No	No records but park is within known range of species

* from 2003 CRMO mammal inventory, Madison et al 2004

GOALS

1. Reduce the risk of human-assisted spread of WNS to local bat populations.
2. Allow populations of bats to benefit from undisturbed reproduction and hibernation in preparation for the possible arrival of WNS.

3. Mitigate the risk of human-assisted spread of WNS at selected caves which currently remain open to visitor use.
4. Increase general public awareness of WNS and its potential impacts.

OBJECTIVES

- Reduce the likelihood of any clothing or equipment that was used in another cave, mine, or tunnel outside the park from entering any cave within the park until decontaminated (includes gear from staff, researchers, cavers, and visitors).
- Inform all park visitors of WNS and utilize screening procedures to reduce the likelihood of any contaminated gear being used in our caves.
- Use the NPS Research Permit and Reporting System (RPRS) and staff orientations/training to reduce the likelihood of researchers or staff bringing WNS into the park.
- Raise local awareness of WNS through outreach, park materials (handouts, park newspaper, displays, bulletin boards, etc.), park website, park programs, news releases, etc.
- Identify measures needed to secure known bat maternity colonies and hibernation sites.

STRATEGIES

1. **Education and Outreach** – WNS is something that few members of the public are aware of, making it a significant education issue. Strong outreach on the park's part will result in a better informed and supportive public that will be more interested preventing the spread of WNS. Knowledge of WNS and why use restrictions are necessary should also help facilitate compliance with screening. It is hoped that this understanding of WNS and the modified behavior required to reduce its spread will have a carryover effect to help protect bats in other caves, mines, and tunnels outside the park on private and other public lands (e.g., BLM and Forest Service).
 - CRMO Website
 - Link on CRMO opening page to USFWS and USGS WNS web-pages
 - Link to USFWS disinfection procedures and to ID BLM sheet

- Screening poster (Figure 1) to promote self-screening at home and decontamination prior to visit
- WNS info brochure
- Visitor Center
 - Poster informing the public that screening and issuance of a permit is required to enter a cave to prevent the spread WNS posted prominently in the visitor center complex
 - A general brochure on WNS will be available at the front desk
 - Copies of disinfection procedures will be available at the front desk
- Article in park newspaper on bats and WNS
- Rack card (Figure 2) that is stamped to become the cave entry permit for the developed caves also contains information on WNS
- Campground will have a poster informing the public that screening and issuance of a permit is required to enter a cave at CRMO in order to prevent the spread WNS posted on both restroom bulletin boards; WNS info brochure will also be posted on both restroom bulletin boards
- Loop Drive restrooms will have poster informing the public that screening and issuance of a permit is required to enter a cave to prevent the spread WNS
- Evening Program
 - WNS notice/info will be given at every evening program
 - WNS brochure will be available at amphitheater after evening program
 - Screening and issuance of cave entry permit will be offered
- Staff Training
 - WNS will be a part of the “all-park” seasonal training
 - All interpreters will receive WNS training to be able to present accurate WNS information to the public and to be able to answer WNS questions from the public
 - All interpreters and fee staff will be trained to do WNS screening and how to issue a cave permit for the developed caves; assigned personnel from other divisions may also be trained and assist with the screening program
- School groups coming to the park will receive information in the confirmation/pre-visit letter that will include a WNS and screening

message; they will be informed that all of the undeveloped caves are presently closed to entry

- Visitor Center Patio talks will include bats and WNS as a main topic at least once per week
- Cave tours will include a WNS message

2. **Screening** – Screening needs to be an informative, efficient (i.e., done quickly), and a positive experience. It is important that visitors connect with cave resources in general and that they will apply what they have learned here in other caving areas to protect bats.

- Screening rack card will have WNS information to briefly educate and explain the importance of preventing WNS; rack card will have a place where it can be stamped converting it into a permit to enter the developed caves (Indian Tunnel, Dew Drop, Beauty, Boy Scout, and Buffalo caves). Rack card permit is only valid for the 5 developed caves. Card will be available in multiple languages.
- Primary screening will be done at the entrance station during the summer season with a fall back at the visitor center
- Interpreters will screen visitors for all guided cave walks at the cave parking lot prior to each walk
- Interpreters will offer screening at each evening program
- In the shoulder season when the fee booth is closed, screening will be done at the visitor center during regular visitor center hours

3. **Cave Closures** – All caves on NPS managed lands are closed to entry without a valid permit. No recreational permits will be issued for use of undeveloped caves. Entry into undeveloped caves will be through the NPS Research Permit System only.

- Cave closure notice will be posted:
 - On each of the four preserve kiosks
 - At King's Bowl parking area (To be installed early spring 2012)
 - At South Grotto parking area/campsite (To be installed early spring 2012)
 - On park website

- Cave closure notification will be disseminated as a press release
 - Cave closure notice will be included in the park newspaper
4. **Adaption** – As new information/science is available or as policy/law changes, we will adjust the WNS Response Plan and its strategies.

SCREENING PROCESS

All screening relies on the honesty of the visitor in complying with or responding to screening questions (see screening rack card/permit below). All visitors will be screened before being issued a permit to enter the developed caves (Indian Tunnel, Dew Drop, Beauty, Boy Scout, and Buffalo Caves). Entry to all other caves on NPS managed lands (the undeveloped caves) will be through the NPS Research Permit system. Information about the need to go through screening and being issued a permit will be readily available (see education and outreach section above).

Those passing the screening will receive a stamp on the screening rack card converting it into an entry permit for the developed caves. The number of permits issued will be tracked. Based on the number of screening/permit cards given out approximately 7,000 groups were issued permits FY 11. The number of positives (where a permit was not issued, because of having been in another cave, mine or tunnel outside the park recently and not having different gear/clothing/shoes available or having been decontaminated) will also be tracked. The number of groups denied a permit in FY 11 was approximately 200 or 3% of the number of cave permits issued.

- Summer--Direct screening will take place at:
 - (1) Entrance station during the hours it is open (generally 8AM-8PM in summer months)
 - (2) Visitor Center
 - (3) Evening program
 - (4) Cave area prior to all guided cave walks
- Shoulder season—primary screening will be done at the visitor center during regular visitor center hours when the fee booth is closed. Direct screening will also take place at the cave area just prior to any guided cave walks.

- Screening questions will be available on the park website so that, prior to coming, visitors will know if they need to go through decontamination procedures or bring different gear/clothing/shoes.
- Screening poster (Figure 1 below) will readily available (see Education and Outreach Strategy above on pp. 7, 8, and 9).

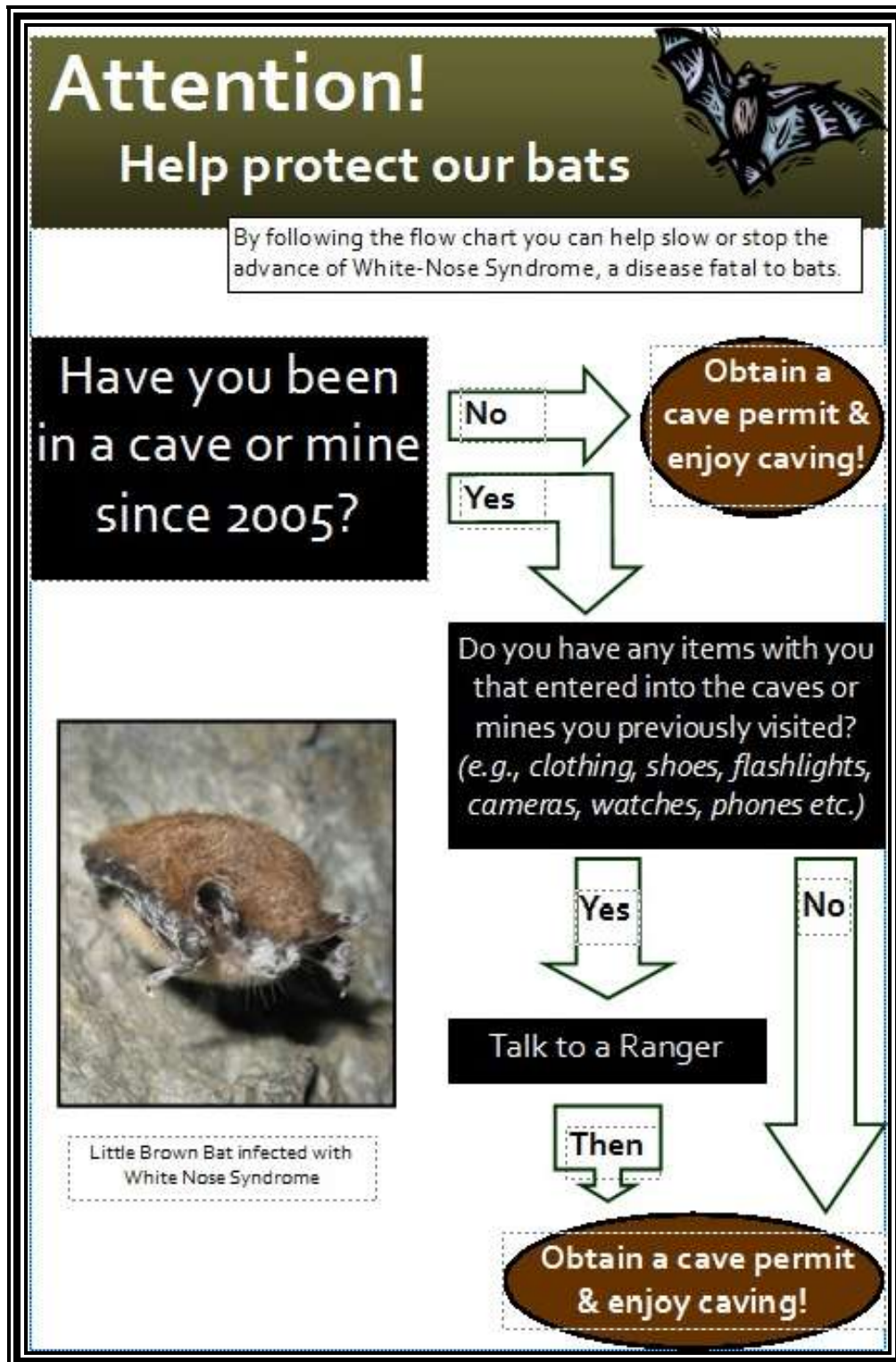


Figure 1.

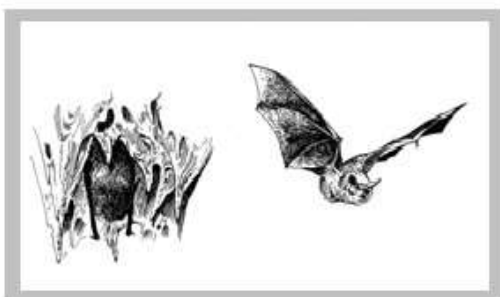
Front of Rack Card

National Park Service
U.S. Department of the Interior

Craters of the Moon
National Monument and Preserve





Bats Are Dying



Since 2006, bats have been dying in unprecedented numbers in the eastern United States and Canada from White-nose Syndrome (WNS), a fatal condition associated with exposure to the fungus *Geomyces destructans*. Now WNS is spreading west. Although humans aren't susceptible, they can potentially spread the fungus between caves, mines, and other bat roost sites.

Your help is needed to prevent this fungus from infecting bats at Craters of the Moon.

 Review the questions on the back of this card. Then obtain a cave permit from a ranger before visiting a cave.

 Only enter caves that are open with this permit: Indian Tunnel, Dewdrop, Boy Scout, Beauty, and Buffalo Caves.

For more information on bats and WNS, ask a ranger.

Back of Rack Card

National Park Service
U.S. Department of the Interior

Craters of the Moon
National Monument & Preserve



To Visit a Cave:

Have you been in a cave or mine since 2005?

Yes

No

Do you have any items with you that entered the caves or mines you previously visited? (e.g., clothing, shoes, flashlights, cameras, watches, phones, etc.)

Yes

No

I agree not to bring these items into caves at Craters of the Moon.

These items have been properly decontaminated since my last cave visit.

Yes

Enjoy
Caving!

Permit valid only with stamp:

Display on vehicle dash

Figure 2. Screening Rack Card that becomes a Permit when stamped

ROLES AND RESPONSIBILITIES OF CRMO DIVISIONS

Resource Management: The Resource Management (RM) division will lead WNS response efforts and provide guidance to all park staff on new WNS scientific findings or changes in policy or legal mandates. RM will be responsible for providing training on WNS and will keep abreast of new research developments and findings. The Chief of RM will remain apprised of national and regional level guidance and collaborate with other NPS units, the state, and other federal agencies. The RM division will support research, inventory and monitoring efforts aimed at determining bat utilization (hibernation sites in particular) and population dynamics and the early detection of WNS in the park; methods that minimize disturbance to bats will be favored.

Interpretation/Education: The Interpretation and Education division (I/E) will serve as the lead for public information and education on WNS. I/E staff will deliver a consistent message to the public and to media representatives. I/E division will develop talking points and a formal press package in consultation with RM and the Superintendent. The I/E division will develop interpretive materials that include, but are not limited to, brochures, exhibits, website pages, interactive displays, and Junior Ranger activities. Visitor screening for guided cave walks will be managed within this division. I/E in conjunction with Maintenance division will produce and mount trail head signs.

Protection (LE): The Protection division will work with other divisions to ensure that a consistent message is delivered to the public regarding WNS and the park's response. Protection staff will ensure compliance with cave closures and screening. Education as an enforcement tool will be favored over issuing citations to violations. During patrols, protection staff will monitor cave closures and assess WNS and closure signs for presence and integrity. If signs are missing or vandalized protection staff will replace. (Note--LE position(s) have been vacant since June 2011.)

Fee Program: Screening will take place at the entrance station during hours of operation. Number of cave permits declined will be tracked.

Maintenance: The Maintenance division will be aware of WNS in order to communicate the WNS message to visitors they encounter. Maintenance staff will install the signs. Maintenance staff will replace Screening Poster in vault toilets if vandalized or missing.

Administration: The Administration division will be aware of WNS and cave closures in order to accurately communicate with visitors they encounter or talk to on the phone. Superintendent will liaise with other agencies and the media.

Natural History Association: NHA may be requested to purchase additional materials relating to the promotion of bats. NHA staff will receive training about WNS along with NPS staff.

RESEARCH/INVENTORY/MONITORING NEEDS

- ✓ Develop improved survey methods at known hibernacula and maternity colonies. (adding to current knowledge, leading to a long-term data set which may help to infer trends in population, and may alert us to presence of WNS)
- ✓ Cave reconnaissance beyond the Monument into the Preserve (2000 expansion) to determine presence /absence of bats, hibernacula and/or maternity colonies.
- ✓ Collaborate with Upper Columbia Basin Inventory & Monitoring Program in the development of acoustic monitoring protocol for Caves Area.
- ✓ Development of acoustic monitoring protocol for wider monument and preserve (*i.e.* driving routes)

ADDITIONAL ACTIONS

1. Chief of I/E will work with Chief of RM and in consultation with the Superintendent to develop a Press Package containing talking points, handouts, and free materials that emphasize appropriate messages. These actions were completed 2011 prior to summer season. New bat video will be highlighted in 2012.
2. Superintendent will send an Info/Ed letter drafted by the Chief of I/E and Chief of RM to cave facilities that were listed as the reason for a cave permit not being issued here.
3. If WNS crosses the continental divide and is present in the Basin and Range Province or the Middle or Northern Rockies, additional actions may be implemented to further minimize the risk of WNS being introduced to CRMO via anthropogenic means. Development of trigger points and associated

responses will be based on current scientific knowledge and accepted management practices available at that time.

4. WNS Information for Veterinarians and Wildlife Rehabilitators

For a complete description of White-Nose Syndrome, visit the US Fish and Wildlife Service (USFWS) website at:

<http://www.fws.gov/WhiteNoseSyndrome/about.html>

If a bat is suspect to have been infected with White-Nose Syndrome, report the possible infection to: **US Fish and Wildlife services (USFWS)**

<http://www.fws.gov/WhiteNoseSyndrome/about.html>

1-800-344-9453

Also contact IDF&G: Rita Dixon, (208) 287-2735 rdixon@idfg.idaho.gov

After contacting the USFWS, **you may be asked to collect the bat from the caller and/or submit the bat if it is dead for diagnostic testing** at the National Wildlife Health Center (NWHC).

When handling a bat with possible White-Nose Syndrome:

- **Pick up the bat with a plastic bag over your gloved hand or use disposable gloves over thicker gloves.**
- If the bat is not being submitted for analysis, Place both the bat and the bag into another plastic bag, **spray the bag inside and out with disinfectant**, close the bag securely, and dispose of it with your garbage.
- Thoroughly wash your hands and follow the [decontamination protocol](#) as described on the White-Nose Syndrome website of the U.S. Fish & Wildlife Service.

5. If or when WNS arrives at/in CRMO may require additional management actions and/or emergency closures. RM staff will continue to monitor the spread of WNS and evaluate strategies to implement in the event that WNS is detected in the park. Any future actions taken in response to the arrival of WNS will be based on best management practices recommended by the Biological Resources Management Division of the National Park Service.

6. Partner groups and organizations.

- Local Chamber(s) of Commerce and local hotels/motels will need to be given accurate and up-to-date information packets and/or brochures. Park management will need to make the local communities aware of the importance of bats to their livelihood, as well as what the monument is doing to protect this valuable resource.
- CRMO Natural History Association staff and board of directors will be given an update and materials to review at a board meeting.
- Local grotto outreach (Gem State Grotto & Silver Sage Grotto)—there will be a Facebook page available in 2012.
- Outreach programs for other types of clubs and groups would be offered as staffing is available.

7. Procedure if a dead bat is found or reported:

- If dead bats are found in or near the entrance to hibernacula they can be submitted for analysis. The NPS Biological Resource Management Division has a service-wide arrangement with the USGS National Wildlife Health Center to do analysis for WNS. Bat carcasses should be sent directly to the NWHC in Wisconsin. For detailed submission protocols see the WNS submission guidelines:
http://www.nwhc.usgs.gov/disease_information/white-nose_syndrome/usgs_nwhc_bat_wns_submission_protocol.pdf
- Any time hibernacula are entered for monitoring or research, bats should be examined for WNS. If white fungus is observed on the face wings, or other areas of skin photos should be taken.
- If dead bats are present up to 3-5 fresh carcasses should be collected for submission.
- If no fungal growth is observed but unexplained mortality is observed, collect 5-8 fresh carcasses for submission.
- Bat carcasses for analysis should be chilled in a refrigerator but not frozen. The USGS submission form is in Appendix 1.; Packing and shipping instruction are in Appendix 2.
- **Live bats should only be handled by personnel with the proper vaccinations (rabies).** If properly vaccinated individuals are not available fungal tape collections or wing punches should not be collected.

8. If positive lab results are received from the NWHC the following offices or personnel will be notified:

- a. Wildlife Biologist; Todd Stefanic

- b. CRMO superintendent; Dan Buckley
- c. CRMO Chief of Resource Management; John Apel
- d. CRMO Geologist/Research Coordinator: Doug Owen
- e. NPS BRMD WNS coordinator: Kevin Castle
- f. ID Department of Fish and Game state WNS coordinator:
Rita Dixon
- g. NPS PWR Cave management Specialists: Joel Despain

Appendix 1. Submission Form Example.

APPENDIX B- USGS NWHC Individual Bat Specimen Collection Datasheet Winter 2010/2011

ID or Band# (state, MMDDYY, collector, ###)	Species (4 letter code)	Onsite location (Outside, Entrance, Inside)	Sex (Male, Female)	Status (Live, Dead, Euth)	Age Class (Juv, Adult, Junk)	Weight (g)	Forearm length (mm)	Visible fungus (Muzzle, Ear, Wing, Tail)	Wing Damage Score (circle one)	Photo file ID	Sample Type (Fungal Tape, Wing Biopsy, Whole Carcass, Archived)	Comments/ Notes Key
		O E I	M F	L D E	J A U			M E W T	0 1 2 3		T B C A	
		O E I	M F	L D E	J A U			M E W T	0 1 2 3		T B C A	
		O E I	M F	L D E	J A U			M E W T	0 1 2 3		T B C A	
		O E I	M F	L D E	J A U			M E W T	0 1 2 3		T B C A	
		O E I	M F	L D E	J A U			M E W T	0 1 2 3		T B C A	
		O E I	M F	L D E	J A U			M E W T	0 1 2 3		T B C A	
		O E I	M F	L D E	J A U			M E W T	0 1 2 3		T B C A	
		O E I	M F	L D E	J A U			M E W T	0 1 2 3		T B C A	
		O E I	M F	L D E	J A U			M E W T	0 1 2 3		T B C A	
		O E I	M F	L D E	J A U			M E W T	0 1 2 3		T B C A	
		O E I	M F	L D E	J A U			M E W T	0 1 2 3		T B C A	


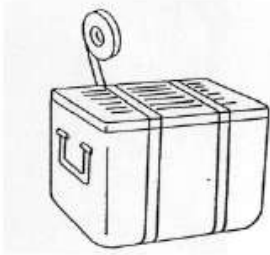
Additional Notes/Diagrams: [use key code in last column to link this information to specific animal(s)]

Appendix 2. Bat Shipping Instructions

- ☐ Place absorbent material in the 3rd plastic bag to absorb any liquids that might leak during shipping.
See appendix for examples of bags and absorbent materials.
 - ☐ Pack the individually bagged animal(s) that are contained within the 2nd sealed bag into the 3rd bag with enough FROZEN BLUE ICE PACKS or similar coolant to keep carcasses cold. Use enough coolant to keep samples chilled if there is a delay in delivery.
 - Blue ice (unfrozen) can be obtained at hardware, sporting goods, or grocery stores.
 - Wet ice can be used if frozen in a sealed plastic container (i.e., soda or water bottle).
 - DO NOT USE DRY ICE.
 - ☐ Seal the 3rd bag with methods described for 1st bag.
 - ☐ Place the completed specimen history and return shipping label in a ziplock bag and tape to the inside lid of the cooler (if you want the cooler returned). NWHC CANNOT PAY FOR SHIPPING.
 - ☐ Using packing or duct tape, tape the cooler shut around the lid and at each end using a continuous wrap around the cooler.
 - ☐ Attach the shipping document (airbill) with the DOT information below to the outside of each cooler in a resealable pouch:

Address:
National Wildlife Health Center
Necropsy Loading Dock
6006 Schroeder Road
Madison, WI 53711

Emergency Contact:
NWHC FIT emergency
608-270-2400

Supplementary Labels:
Keep Cold
- 

- ☐ Mark the cooler with the appropriate information:
 (See Pg. 3 for printable marking labels)
 - Carcasses of animals that died of unknown causes:
BIOLOGICAL SUBSTANCE, CATEGORY B and UN 3373.
 - Blood and tissue samples from apparently healthy animals (hunter-killed, live captured):
EXEMPT ANIMAL SPECIMENS.
 - Blood and tissue samples from dead or sick animals:
BIOLOGICAL SUBSTANCE, CATEGORY B and UN 3373.
 - ☐ Note the tracking number in case packages are delayed.
 - ☐ These instructions cover federal shipping regulations for commercial carriers.

Appendix:

Example of bags available at large supermarkets (list not all inclusive):

Inner and second layer bags:

Hefty Big Bag – 22 gal
 Hefty Freezer – 1 gal
 Hefty Jumbo – 2.5 gal

Third layer for cooler liner:

Hefty Cinch Sak (1.1 mil) – 33 and 39 gal
 Hefty Lawn and Leaf (1.1 mil) – 33 and 39 gal
 House brand large trash (1.1 mil) – 30 gal

Absorbent material:

Super absorbent packet or pads for water
 Paper towels
 Do not use packing peanuts or shredded paper.

Ziplock Freezer – 1 gallon
 Ziplock Big Bag – 20 gallon
 Glad Freezer – 1 qt, 2 qt, 1 gal

Glad Force Flex (1.05 mil) – 25 gal
 Hefty Ultra Flex (1.3 mil) – 30 gal
 House Lawn - Leaf (1.2 mil) – 39 gal

Cellulose wadding
 Cotton batting or cotton balls

Appendix 3: White-Nose Syndrome Decontamination Protocol v 02.23.20912

White-Nose Syndrome Decontamination Protocol - Version 02.23.2012**I. GENERAL INFORMATION:**

The fungus *Geomyces destructans* (*G.d.*) is the cause of white-nose syndrome (WNS), a disease that has devastated populations of hibernating bats in eastern North America. Since its discovery in New York in 2007, WNS has spread rapidly through northeastern and mid-Atlantic states and now to the Midwest and eastern Canada, and continues to threaten bat populations across the continent. For the protection of bats and their habitats, we strongly recommend compliance with all current cave and mine closures, advisories, and regulations on the federal, state, tribal, and private lands you plan to visit. In the absence of cave and mine closure policy, or when planned activities involve close/direct contact with bats, their environments, and/or associated materials, the following decontamination procedures should be implemented to **reduce the risk of transmission** of the fungus to other bats and/or habitats. For the purposes of clarification, the use of the word "decontamination," or any similar root, in this document entails both the 1) cleaning and 2) disinfection of exposed materials in a way that is safe to both human and animal health. **Under no circumstances should clothing, footwear or equipment that was used in a WNS-affected state or region be used in a WNS- unaffected state or region.** Some state/federal regulatory or land management agencies have supplemental documents that provide additional requirements or exemptions on lands under their jurisdiction to those provided herein. All supplemental material for state and federal agencies can be found at: <http://www.fws.gov/WhiteNoseSyndrome/>.

If you observe live or dead bats (multiple individuals in a single location) that appear to exhibit signs of WNS, contact a wildlife professional in your nearest state (<http://www.fws.gov/offices/statelinks.html>) or federal wildlife agency (<http://www.fws.gov/offices/>, <http://www.fs.fed.us/>, <http://www.blm.gov/wo/st/en.html>, or <http://www.nps.gov/index.htm>). **Please do not handle bats unless properly trained, vaccinated for rabies, and permitted to do so by the appropriate government agency.**

II. KNOWN DECONTAMINANTS¹:**Disinfectants/Applications**

While other disinfectant(s) with similar chemical formulas (e.g., a minimum of 0.3% quaternary ammonium compound, etc.) or water based applications may exist, laboratory testing has determined that the following options are known to kill the conidia of *G.d* when employed for a minimum of 10 minutes, unless specified.

- Submersion in hot water - Effective at sustained temperatures $\geq 50^{\circ}\text{C}$ (122°F) for **15 minutes**^{2,3}
- Lysol® IC Quaternary Disinfectant Cleaner - Effective at 1:128 dilution, or 1 ounce of concentrate per gallon of water^{2,3}
- Professional Lysol® Antibacterial All-purpose Cleaner - Effective at 1:128 dilution, or 1 ounce of concentrate per gallon of water^{2,3}
- Formula 409® Antibacterial All-Purpose Cleaner - Effective at concentrations specified by label^{2,3}
- Clorox® (6% HOCl) Bleach - Effective at 1:10 dilution (bleach : water)^{2,3,4}
- Lysol® Disinfecting Wipes - Effective at 0.28 % di-methyl benzyl ammonium chloride^{2,3}

¹ Reference herein to any specific commercial products, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government.

² Product guidelines should be consulted for compatibility of use with one another before using any decontamination product. Also, detergents and quaternary ammonium compounds (i.e. Lysol® IC Quaternary Disinfectant Cleaner) should not be mixed directly with bleach as this will inactivate the bleach and in some cases produce a toxic chlorine gas. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

³ Final determination of suitability for any decontaminant is the sole responsibility of the user. Use of some treatments which utilize such method need to be applied carefully, especially in confined spaces, due to inhalation or contact risks of the product. All users should be aware of these risks prior to entering cave environments and understand that products and corresponding procedures may cause irreversible harm. Always use personal protective equipment to reduce contact with these products, particularly when recommended by the manufacturer.

⁴ Do not store bleach solution for more than 24 hours as the solution will begin to break down once diluted and/or exposed to sunlight.

Safe Use of Decontaminants

Ensuring the safety of those who use any of the above chemicals is of utmost importance. Material safety data sheets (MSDS) are developed by chemical-product manufacturers to provide critical information on the physical properties, reactivity, potential health hazards, storage, disposal, and appropriate first aid procedures for handling or working with substances in a safe manner. Familiarization with MSDS for chemical disinfectants prior to use will help to ensure safe use these materials and improve emergency response.

It is the responsibility of the users of this protocol to read and follow the labeled instructions provided on the products outlined in this section. It is a violation of federal law to use, store, or dispose of a regulated product in any manner not prescribed on the approved product label and associated MSDS.

Always remember the following:

- Reference the product label and MSDS prior to use of product to:
 - Avoid dangerous/volatile situations; know reactivity and stability of products.
 - Know appropriate first aid measures
 - Ensure adequate ventilation
 - Wear personal protective equipment: respiratory, hands, skin, body, and eye protection
 - Develop a spill plan and prepare a spill kit
 - Ensure secondary containment (incidental spill prevention such as a catchment basin or tub)
- Follow all local, state and federal laws (i.e., state-by-state requirements for product disposal may vary. Disinfectant chemicals, or their contaminated rinse water, should be prevented from entering any ground or non-municipal water feature such as streams, rivers, lakes, or other body of water).

III. BIOSECURITY/DECONTAMINATION PROCEDURES¹:

Before Each Cave/Mine or Site Visit:

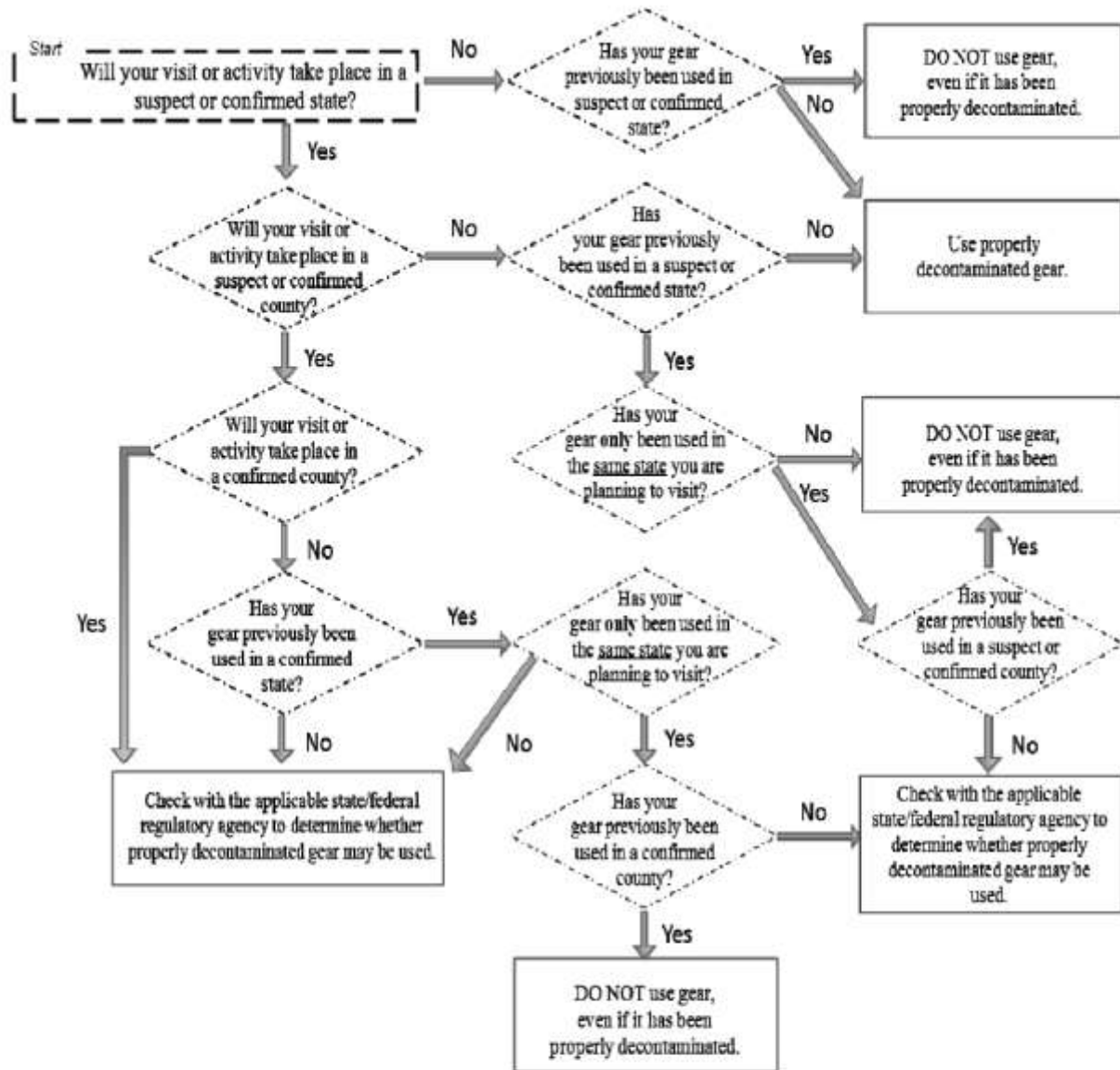
- 1.) Exercise care when selecting the appropriate gear⁵ for use on your cave/mine visit or bat research site. Choose gear that can be most effectively decontaminated (i.e., rubber wellington type vs. leather boots) or dedicated to a specific location. **Remember, under no circumstances should any gear that was used in a WNS-affected state or region be used in a WNS-unaffected state or region.** Brand new gear can be used at any location where access is otherwise permitted.
- 2.) Determine G.d./WNS status⁶ of the state/county(s) where gear was previously used.
- 3.) Determine G.d./WNS status⁶ of state/county(s) to be visited.
- 4.) Determine whether gear is permitted for your cave/mine visit or bat related activity, as defined by the current WNS case definitions⁷ and the flowchart below.
- 5.) Determine if any state/federal regulatory or land management agency addendum or supplemental document⁸ provides additional requirements or exemptions on lands under its jurisdiction that supplement the final instruction identified in the flowchart below.

³ In this document, "gear" refers to any clothing, footwear, and/or equipment.

⁶ Visit <http://www.fws.gov/whitenosesyndrome/maps.html> to determine the WNS status of a county or state.

⁷ Visit http://www.nwhc.usgs.gov/disease_information/white-nose_syndrome/wns_definitions.jsp for current WNS case definitions.

⁸ To find applicable addenda and/or supplemental information, visit <http://www.fws.gov/whitenosesyndrome/research.html>



6.) When visiting multiple caves/mines or bat research sites on the same day, decontaminate all gear according to the applicable disinfectant(s)/application(s) listed in Part II between **each** cave/mine/site, **unless** otherwise directed in an agency addendum. It is recommended that known confirmed or suspect caves/mines be visited only after those sites of unknown G.d. status have been visited, to further reduce the risk of inadvertent transmission.

7.) Prepare a decontamination strategy (i.e., how and where all gear and waste materials will be stored, treated and/or disposed of after returning to your vehicle and base area) for your particular circumstances that provides for decontamination of gear on a daily basis **unless** instructed above to decontaminate gear more frequently throughout the day.

After Each Cave/Mine or Site Visit:

- 1.) Thoroughly scrub and remove sediment/dirt from clothing, footwear, and other gear immediately upon leaving the cave/mine or bat research site. Mild soaps, as detailed below, can be used for this step, as can many of the cleansers identified in Part II.
- 2.) Disinfect gear by using the appropriate disinfectant(s)/application(s) listed in Part II for a minimum of 10 minutes, unless otherwise noted. All gear not decontaminated on site should be isolated (quarantined) in a sealed plastic bag or container to be cleaned and disinfected off-site. Precautions should be taken to avoid contamination of vehicles, and exposed gear should be stored separately from unexposed gear. Gear used in a suspect or confirmed state should be decontaminated prior to transport when traveling back to or through a state **without** known cases of G.d./WNS.

A.) Submersible Gear (i.e. clothing, footwear, and/or equipment that can be submerged in liquid):

I.) Clothing, footwear, and submersible equipment:

Once fully scrubbed and rinsed of all soil and organic material, clothing, footwear, and any appropriate equipment should be machine or hand-washed using a conventional cleanser like Woolite[®] detergent or Dawn[®] antibacterial dish soap, respectively, in water (the use of Dawn[®] antibacterial dish soap is not intended for use in conventional washing machines.) Once cleaned, gear should be rinsed thoroughly in water, soaked for a minimum of 10 minutes in the appropriate disinfectant(s)/ application(s) from Part II, rinsed thoroughly in water again, and air dried. If submersing gear in hot water for use as the primary disinfectant/application, then recognize all gear must be **submersed in water of at least 50°C (122°F) for a minimum of 15 minutes**. Note: Although commercially available washing machines with sanitation cycles often sustain desirable water temperatures to properly disinfect gear, the use of these machines for disinfection should not occur until the efficacy for killing the conidia of G.d. can be demonstrated.

B.) Non-submersible Gear:

Gear that may be damaged by liquid submersion should be cleaned according to the manufacturer's recommendation, when appropriate, using soap (e.g. Dawn[®] antibacterial dish soap) and water, AND disinfected using the most appropriate disinfectant(s)/application(s) in Part II and allowed to air dry.

I.) Ropes, Harnesses, and Other Vertical Equipment:

Rope and webbing, other than specific types manufactured by the Sterling Rope company, have not been tested for integrity after exposure to these decontamination procedures and therefore should be dedicated to a single cave/mine or not used at all (cave/mine requiring use should not be entered). All ropes, harnesses and soft components of equipment used for building anchor systems (e.g., "quick draws," cams, cordelletes, etc.), and personal vertical gear (e.g., slings, rope for Prusiks, etc.) should, at a minimum, be cleaned to the manufacturer's specifications after each use, regardless of their dedication or re-use status at a location.

Sterling Rope's rope (Sterling Superstatic or HTP) and stitched webbing (Sterling tubular 1" webbing) were tested, and the following decontamination procedure has been recommended: Wash rope/webbing in a front loading washing machine on a delicate (cold) cycle using Woolite[®] detergent (at the manufacturer's recommended concentration); remove and place rope/stitched webbing in a 1:128 diluted Lysol IC[™] Quaternary Disinfectant Cleaner for 15 minutes; rinse two more times in clean water; and allow to air dry. Strength testing results are available at: <http://www.caves.org/WNS/Sterling%20Results.pdf>. Users should consult Sterling Rope for more information regarding the safety and applicability of this procedure on their product.

II.) Cameras and Electronic Equipment:

Until effective techniques are developed to comprehensively disinfect cameras and electronics, it is recommended that these items only be used when absolutely necessary. Regardless of the cave/mine visited, cameras and electronics should be decontaminated after each visit using the most appropriate disinfectant/application in Part II. If practical, equipment that must be used in the cave/mine may be placed in a sealed plastic casing (i.e., underwater camera housing), plastic freezer bag, or plastic wrap that permits proper operation of the equipment (i.e., glass lens is exposed) and further reduces the risk of exposure to the environment. Prior to opening or removing any plastic protections, wipe the outside surfaces with an appropriate disinfectant(s)/application(s) described in Part II. Plastic freezer bag or wrap should be removed and discarded after each visit. A sealed plastic casing may be reusable (refer to step 4 in Part III) if properly submersed in one of the disinfectant(s)/application(s) from Part II and the functionality and protective features of the casing have not been sacrificed (check with manufacturer). After removal of any outside plastic protection, all non-submersible equipment surfaces (i.e., camera body, lens, etc.) should be wiped using the appropriate disinfectant(s)/application(s) in Part II.

3.) Reduce the risk of unintentional vehicle contamination and transport of *G.d.* to new areas by taking precautions to transport gear in clean containers, conduct all work outside of the vehicle after exiting a cave/mine or completing necessary field work, changing into clean clothing and footwear prior to entering the vehicle, and clean dirt and debris from the outside of vehicles (especially wheels/undercarriage). At a minimum, outer clothing and footwear should be removed and isolated in a plastic bag or container prior to entering a vehicle. Storage options vary considerably depending on the type of vehicle; but **always clean and disinfect the outside surfaces of storage containers prior to putting them back in the vehicle.**

Note: Protocol updated as of 02.23.2012